



Superior Energy Performance At Nissan

Wade Willatt

WEEC

September 2017

**NISSAN GROUP
OF NORTH AMERICA**



U.S. Footprint



**Nissan North America
Headquarters
(Franklin, Tenn.)**



**Vehicle Assembly Plant
(Canton, Miss.)**



**Vehicle Assembly Plant
(Smyrna, Tenn.)**



**Nissan Technical Center
(Farmington Hills,
Mich.)**



**Powertrain Plant
(Decherd, Tenn.)**

More than **22,000** employees
in the U.S.



**Arizona Technical
Center
(Chandler, Ariz.)**



**Nissan Design
America
(San Diego, Calif.)**



**Nissan Motor Acceptance Corporation
(Dallas, Texas)**



**Advanced Research
Center
(Silicon Valley, Calif.)**

U.S. Manufacturing & Investment



- Celebrated more than 30 years of U.S. Automotive Manufacturing since 1983
- \$11 billion manufacturing investment since 1981
- U.S. production has increased by more than 88% since 2010
- More than 300 suppliers in 30 states provide parts and materials to Nissan
- \$14 billion in U.S. parts and materials purchases in 2016
- 15 million vehicles, 10 million engines and 90,000 lithium ion battery packs proudly manufactured in the U.S.



U.S. Manufacturing



MISSISSIPPI

CANTON VEHICLE ASSEMBLY PLANT



ALTIMA



TITAN



FRONTIER



NV PASSENGER

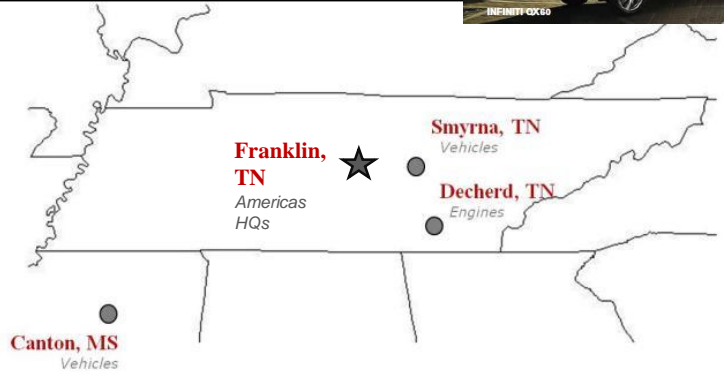


NV CARGO



MURANO

NISSAN GROUP OF NORTH AMERICA



TENNESSEE

SMYRNA VEHICLE ASSEMBLY PLANT



PATHFINDER



ALTIMA



ROGUE



LEAF



INFINITI QX50



MAXIMA

Energy Commitments



Cost Reduction
On Energy Spend

Nissan Green
Program

ENERGY STAR®
Certification

DOE Better Plants /
Superior Energy
Performance®

Nissan Green Program



➤ Penetration of Zero-Emission Vehicles



1.5 mil.

➤ Wider Application of Fuel Efficient Vehicles

35%
FE improvement



➤ Minimize Corporate Carbon Footprint

20%
reduction



➤ Minimize the use of New Natural Resources

25%
recycled resource usage



External Program Commitments



U.S. DEPARTMENT OF
ENERGY



Smyrna = Central Office (Mother Region) for ISO 50001
Each Site = SEP Certification (local)



NNA
Corp-Wide



Smyrna/
Canton EPI



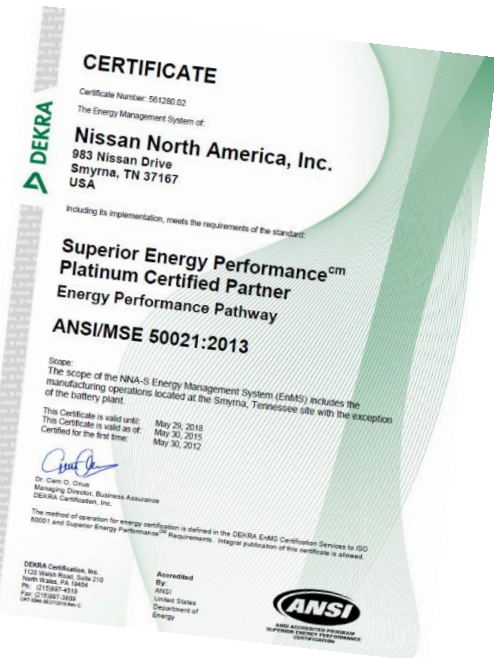
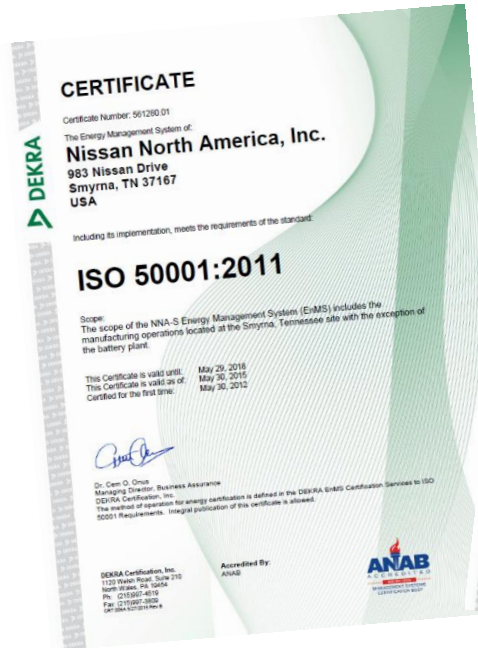
Decherd/
Stamping &
Fascia Shops

SEP Certification



NNA-Smyrna received ISO 50001 and Superior Energy Performance (SEP) Certifications in 2012.

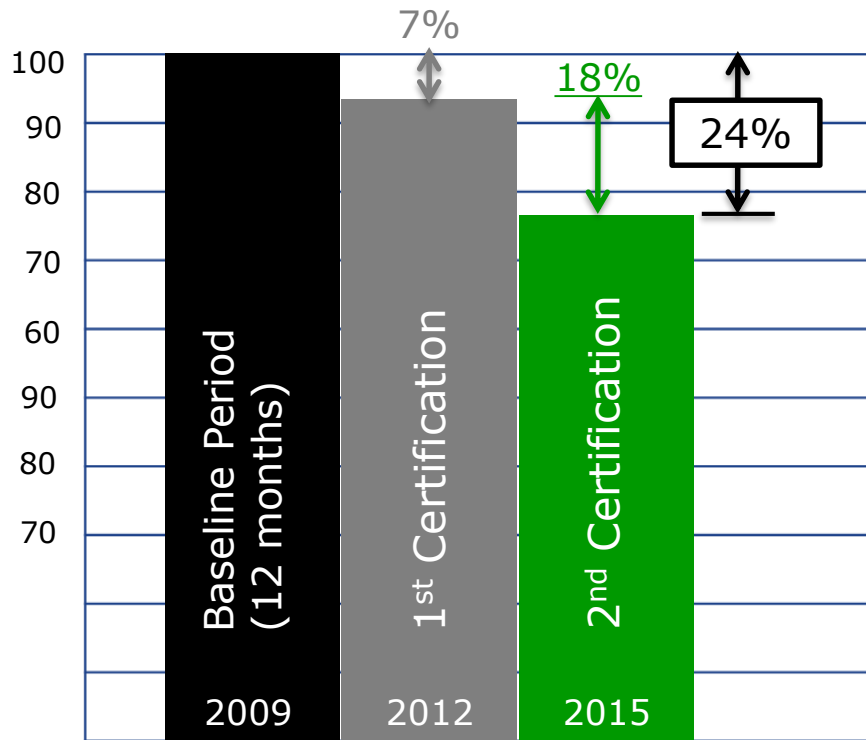
- Became the first passenger-vehicle manufacturing facility to attain ISO 50001 and SEP certifications.
- Within 3 years of establishing baseline, the Smyrna plant improved energy performance by 7%.



Continuous Improvement



Normalized
Facility Energy
Consumption
(source energy)



Nissan – Smyrna, TN facility

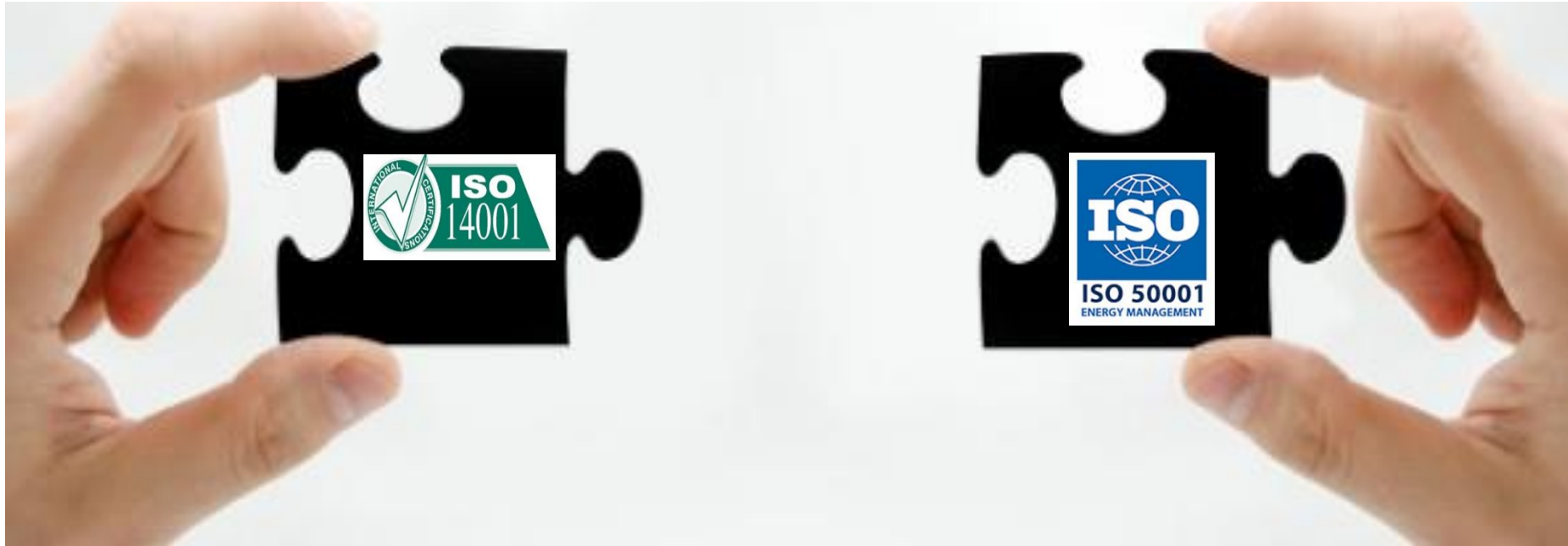
SEP Enterprise Business Case







- **Corporate Goals** and Customer Expectations
 - SEP Supports global CO₂ reduction targets
 - TdC reduction and supply chain cost savings.
- **Overall Opinion** (OaO) & Brand Strengthening
 - OaO is a key performance indicator
 - External recognition improves perception of environmental performance
- **Structure** ISO 50001 & SEP Harmonize EnMS across U.S. Sites
 - Smyrna plant serves as “Central Office”
 - Standardization (audits, project tracking, EnPIs)



Integration with EMS





Superior Energy Performance	Smyrna	
Superior Energy Performance	Decherd	
	Battery	
Superior Energy Performance	Canton	

Nissan Environmental and Energy Management Systems

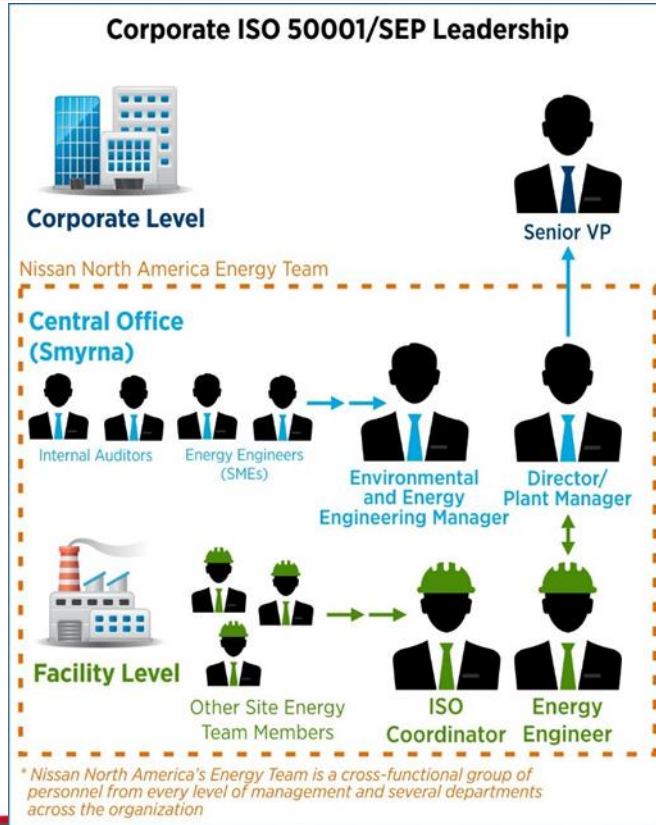
ISO Principles



**Say what you do
Do what you say
Prove it**

Improve it

EnMS Structure



EnMS Functions of Nissan Central Office



- | |
|--------------------------------|
| 1. Planning, Audits |
| 2. Develop EnMS Procedures |
| 3. Technical Support, Guidance |

EnMS Functions of Nissan Sites



- | |
|-------------------------------|
| 1. Implement EnMS Procedures |
| 2. Energy Review & Planning |
| 3. Action Plans, Energy Perf. |

Enterprise EnMS Implementation



- Utilized existing EnMS from Smyrna
 - Smyrna serves as Central Office
 - Modified all procedures so they are not Smyrna centric
- Most of the effort was spent on sites implementing the required practices
 - Developed a task list
- SEP adds rigor, analysis, and disciplined structure
 - Improved the consistency between sites making regional reporting easier
- EnMS prompts NNA to consider energy impacts of new design projects and facility/equipment modifications

SEnPI Calculation

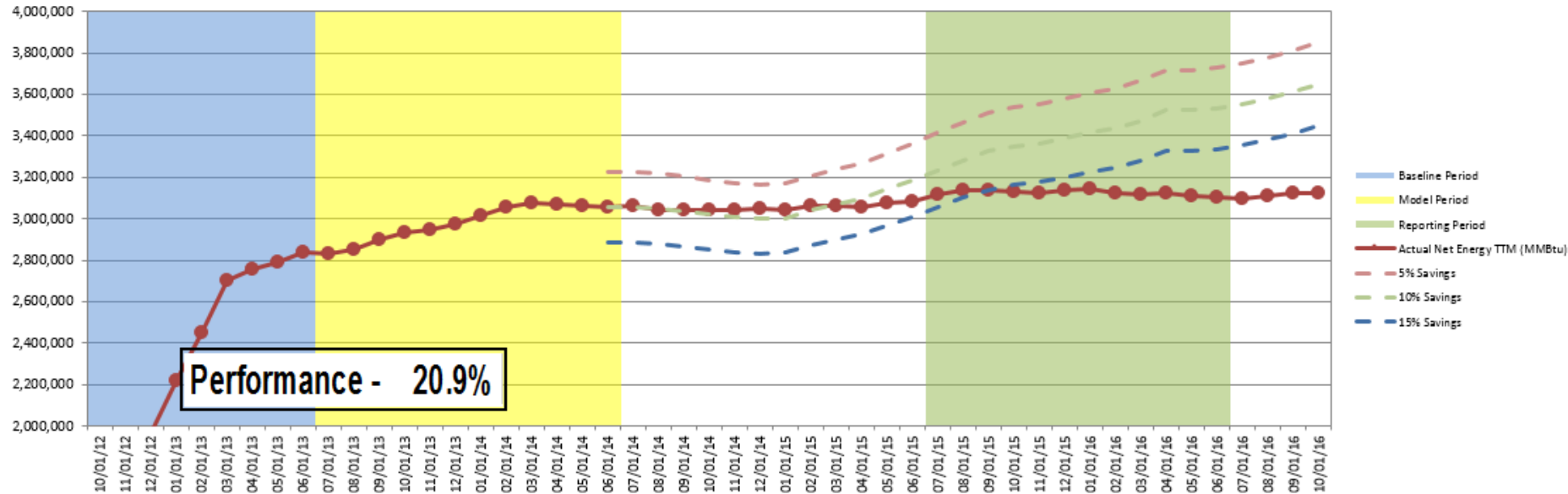


- Tools and Inputs Used
 - GT EnPI Version 3.15
 - Newer tools available, but prefer this tool as we feel it is easier for monthly updates on performance
 - NOAA weather data
- Tried many combinations of variables
 - Weather (CDD, HDD, average temperature, average humidity)
 - Production (total volume, JPH, hours of operation)
 - Production Mix (by line, by product)

Canton SEP Achievement



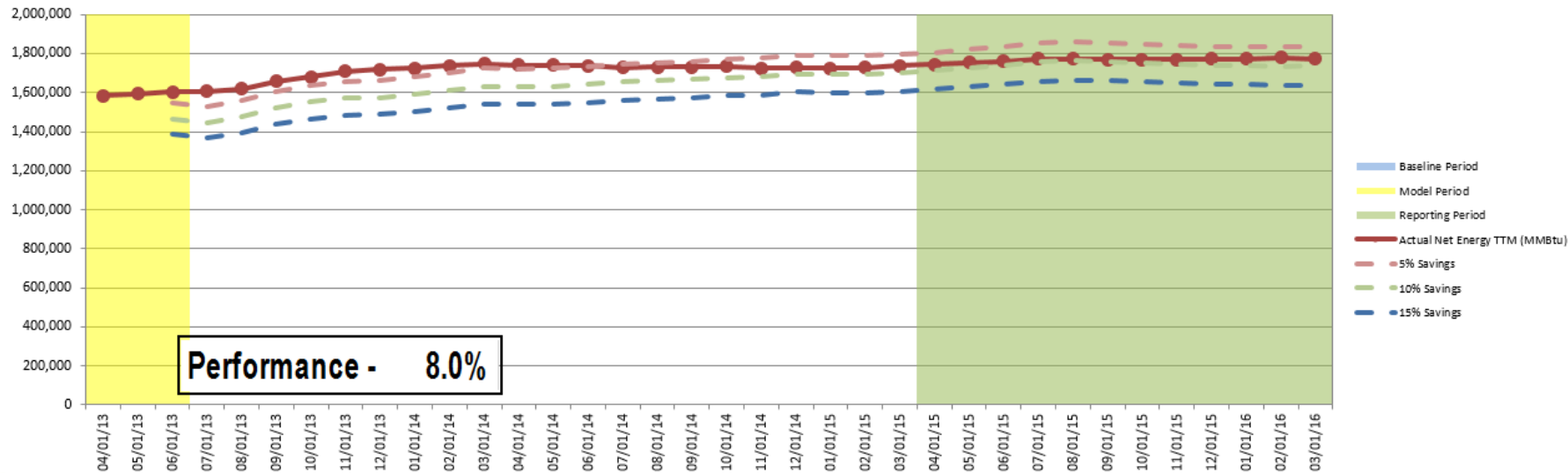
- Superior Energy Performance Indicator (SEnPI)
 - Platinum Performance Level
 - 20.9% verified improvement in 3 years



Dechard SEP Achievement



- Superior Energy Performance Indicator (SEnPI)
 - Silver Performance Level
 - 8% verified improvement in 3 years



Benefits



- Easier best practice and resource sharing amongst sites
 - EnMS maintenance is distributed across multiple sites
 - Met our Better Plants Challenge (25% reduction) target 5 years early
- Not every site is externally audited each year
 - Reduced costs and resource requirements
- Corporate Sustainability Report – 3rd Party Audit of CO₂/GHG reporting

“ISO 50001 and SEP are worth the effort as it brings structure and discipline to the program. Nissan values third-party validation and the external recognition for being an environmentally friendly manufacturer.”

—Mike Clemmer, Director - Manufacturing Engineering

Lessons Learned



- Experience is key
 - Use 1 site as pilot to ease changes during development
 - Ensure you have a mix of team members with ISO and energy backgrounds
 - SEP training from DOE helps bring energy and ISO experts up to speed
- Mature ISO 14001 program helps ISO 50001 adaptation
- Simplification – Merged Energy & Environmental Policies and Procedures
- SEP Best Practice/Scorecard points are value-add and worth doing
- EnPI Tool is very powerful in conveying performance
 - Japanese energy managers like the DOE EnPI tool

Energy Reduction Resources



FREE Energy Assessments by Industrial Assessment Centers



<http://energy.gov/eere/amo/locations-industrial-assessment-centers>



- ENERGY STAR Portfolio Manager can help benchmark your performance against other similar plants
- Tips available regarding taking the next step in Energy Management

www.energystar.gov

Available Industries for EPI Tool

- Automobile Assembly
- Cement Manufacturing
- Commercial Bread & Roll Bakery
- Container Glass Manufacturing
- Cookie and Cracker Bakery
- Flat Glass Manufacturing
- Frozen Fried Potato Processing
- Integrated Paper and Paperboard Manufacturing
- Juice Processing
- Pharmaceutical Manufacturing
- Pulp Mill
- Wet Corn Milling

THANK YOU!



